

## Microangiopathic Hemolytic Anemia Associated with Metastatic Breast Carcinoma

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A 46-year-old woman with infiltrating ductal adenocarcinoma of the breast with metastases to multiple sites presented with 3 days of increasing fatigue and shortness of breath. Physical examination revealed tachypnea, tachycardia, jaundice, and conjunctival pallor.

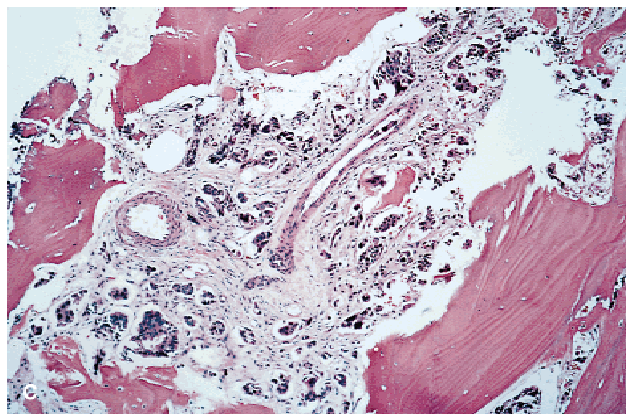
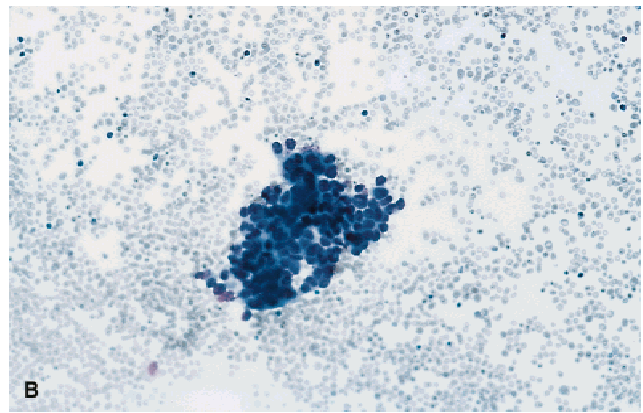
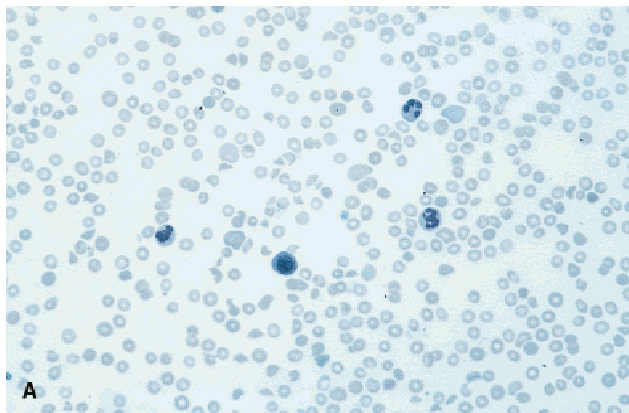
Laboratory evaluation revealed a white blood cell count of 8,500/cu mm, hemoglobin 4.7 gm/dl, hematocrit 12.7%, platelets 75,000/cu mm, reticulocyte count 4%, nucleated RBC 129/100 WBC, prothrombin time 12.6 sec., activated partial thromboplastin time < 20 sec., fibrin degradation product screen > 40, D-dimer > 2,000 ng/ml, fibrinogen 193 mg/dl, factor V 99%, factor VII

80%, and factor VIII 284%. Total bilirubin was 4.5 mg/dl with a direct fraction of 0.2. Haptoglobin was < 6 mg/dl, lactic dehydrogenase 5,237 U/l (normal, 338–610 U/l), and CEA of LDH of 1127 ng/ml. Direct Coomb's test was negative and urinalysis showed trace protein, 3+ hemoglobin but only 3 erythrocytes/high power field.

The peripheral blood film (Image A) showed numerous schistocytes, nucleated red blood cells, and decreased platelets.

The bone marrow aspirate (Image B) showed large clusters of malignant cells with pleomorphic nuclei.

The bone marrow biopsy (Image C) showed almost



complete replacement of the marrow by clusters of malignant cells embedded in a fibrous stroma.

She was transfused with packed red blood cells, but she continued to have significant hemolysis and a further decrease in her platelet count. She died seven days after admission.

The findings in this patient are consistent with micro-

angiopathic hemolytic anemia (MAHA), a rare feature of metastatic adenocarcinoma of the breast. Disseminated intravascular coagulation is unlikely in the setting of normal coagulation parameters including factor VIII and fibrinogen. The elevated fibrin degradation products and D-dimers are likely secondary to her malignancy and MAHA.